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FACT SHEET

California Department of Food and Agriculture
Animal Health Branch

Screwworm

- January 2000 -

Screwworm (*Cochliomyia hominivorax*) fly larvae (maggots) are a devastating flesh-eating parasite capable of debilitating any warm-blooded animal. The Latin translation for *hominivorax* is "humans being devoured", highlighting that all warm-blooded animals are at risk, including humans.

Infests wounds and feeds on living tissue

Whereas, most maggots feed on the dead flesh surrounding wounds, screwworms feed on living tissue. Any wound or area not protected by skin can become infested. Commonly infested wounds in animals include those from tick bites, castration, dehorning, branding, shearing, and wire cuts. The navel of newborn animals is especially vulnerable. Flies may lay eggs near the nostril of people and animals. The nearly invisible larvae then move up into the nasal passages and sinuses and feed on the living tissue. They may even penetrate into the brain, causing death! In countries where screwworm exists, it is a serious human health concern. In 1990, 300 people in El Salvador were infested with screwworms.

Clinical signs

Animals infested with screwworms may show weight loss, wounds with foul-smelling odor, and be separated from the herd. Animals may die from secondary infection or toxicity in 1-2 weeks if the infestation is not treated. It may be difficult to see the maggots at the wound surface because only the breathing tubes are exposed. When the wound is disturbed, the maggots burrow or "screw" deeper into the tissue, hence their name. Maggots of other blowflies do not feed in a vertical position or burrow deep into the wound, but instead are seen on the wound surface feeding on dead flesh.

Rapid spread

Screwworms have a simple life cycle: a mated female fly will lay 300 to 400 eggs on a fresh wound, eggs hatch and larvae burrow into and consume the healthy flesh for 3-4 days, larvae fall to the ground and pupate in the soil for 7 days, and then emerge as adult flies. An adult female fly can lay 3,000 eggs in her month-long life and fly up to 125 miles, spreading the infestation. The infestation can also be spread by the transport of animals and people from areas in Central and South America where screwworm is found.

Devastating losses

During the 1960's, it was estimated that United States (US) livestock losses due to screwworm infestation were in excess of $250 million/year. The United States Department of Agriculture (USDA) estimates that if screwworm were to reinfest and spread across the US today, livestock losses would be in excess of $844 million/year. Importantly, these figures do not put a dollar amount on the pain and suffering of the animals and people infested with the maggot that "devours humans".

What is being done to protect the US?

Female screwworm flies mate only once. If this mating is with a laboratory-raised male sterilized by irradiation, then the life cycle is broken. The release of sterile males to control screwworm was developed in the 1950's. Since then, releasing sterile flies from low-flying airplanes has been the hallmark of the USDA control program.

Screwworm was officially eradicated in 1982 from the US following a 25 year long, multi-million dollar effort, and from Mexico in 1991. However, in 1992 screwworm again infested Mexico and $9.2 million USDA dollars was used to assist Mexico with the release of 531.8 million sterile flies. The USDA supported successful screwworm eradication efforts in the countries of Guatemala, Belize, El Salvador, and Honduras. These countries were declared free in 1994, 1994, 1995, and 1996, respectively. Since 1992, an active USDA campaign in Nicaragua has released 25 billion sterile flies. Costa Rica also has a USDA-supported eradication plan and 60 million sterile flies/week are being released in 2 mile-wide lanes across the entire country. Jamaica just began its program with $8 million USDA dollars to employ a field force and release 20 million sterile flies/week.

Why does the USDA invest in screwworm eradication in Central America?

The plan is to eradicate screwworm from the entire region north of the Darien Strait in Panama. This will protect the southern US border from incursion. Once achieved, the barrier will be maintained by the release of 40 million sterile flies/week. Although expenditures for screwworm eradication may seem high with a yearly budget of $20 million, control expenses are dwarfed by devastation caused by this parasitic infestation.

The battle wages on!

The battle of screwworm eradication is never won, and constant vigilance is required. Recently, screwworm has re-entered the US on several occasions. In August 1998, the maggots entered the country in a neck lesion on a US citizen returning from Brazil. In December 1998, Texas reported that screwworm larvae had been identified from an Angora goat. Despite an extensive investigation, the origin of the larvae was never determined. Since the finding, Texas animal health officials have checked more than 40,000 head of livestock and many dogs in southwest Texas, and no additional screwworm larvae were found. Texas remains on full alert for screwworm - ranchers, veterinarians, hunters, and anyone handling livestock are instructed to turn in maggots to animal health officials. In 1997, a screwworm infested dog entered Texas from Panama after airport stops in Florida, South Carolina, and Georgia. The prompt identification of these incursions has allowed the situations to be controlled by insecticide application to the patients, their immediate and past environments, and, if enough time had elapsed to allow larvae to pupate to flies, sterile fly release to break the life-cycle. The US remains free of this serious parasite due to the continued vigilance of livestock and pet owners, private veterinary and medical practitioners, and animal health officials.

What can you do?

Producers should remain on the alert for unusual looking maggots on livestock or pets.

If screwworm is suspected:

- Obtain a sample by placing maggots in a sealed plastic bag, jar, or in an alcohol-filled jar, film canister, test tube, or similar device,
- Remove and kill all visible larvae, and
- Notify the Animal Health Branch or USDA immediately.

Animal Health Branch

Headquarters	(916) 654-1447
Redding	(530) 225-2140
Modesto	(209) 491-9350
Fresno	(559) 237-1843
Ontario	(909) 947-4462

USDA-Veterinary Services Sacramento
(916) 857-6170 or tollfree (877) 741-3690

If screwworm is confirmed, animal health officials may quarantine the animal. Daily wound care and treatment with an insecticide are necessary to completely control the screwworm larvae. The USDA will investigate and determine if insecticidal treatment of the environment and sterile fly release are warranted. Prompt reporting of suspect cases saves valuable time and increases the likelihood that the maggots can be destroyed prior to pupating and becoming adult flies.